

What is claimed is:

1. A method for creating a spatial multiplex video picture frame from a plurality of video picture frames where each video picture frame has a picture header and a plurality of frame components with each frame component having a component header, the method comprising:

removing the picture header from each video picture frame to be included in the spatial multiplex video picture frame;

generating a new picture header for the spatial multiplex video picture frame, the new picture header indicating a slice format;

altering the component headers of each video picture frame to be included in the spatial multiplex video picture frame to set a slice format based picture position for the video picture frame within a picture produced by the spatial multiplex video picture frame; and

generating the spatial multiplex video picture frame by concatenating the new picture header together with the plurality of video picture frames having no picture header and having the altered component headers.

2. The method of claim 1, further comprising:

receiving the video picture frames from a plurality of locations through a network;

and

sending the spatial multiplex video picture to the plurality of locations through the network.

3. The method of claim 2, further comprising:

establishing a connection to the network through an asymmetric digital subscriber line, and wherein the video picture frames are received and the spatial multiplex video picture is sent through the asymmetric digital subscriber line network connection.

4. The method of claim 2, wherein a plurality of devices send the video pictures being received, the method further comprising:

negotiating a compatible mode of operation with the plurality of devices; and  
broadcasting a start indicator to the plurality of devices to synchronize  
transmission of the video picture frames.

5. The method of claim 1, further comprising:

writing the spatial multiplex video picture frame to a buffer as the new picture  
header and video picture frames of the spatial multiplex video picture frame are being  
concatenated;

transmitting the spatial multiplex video picture frame to a network interface; and  
detecting the end of the spatial multiplex video picture frame prior to performing  
the steps of claim 1 for the next spatial multiplex video picture frame.

6. The method of claim 1, wherein the slice format based picture position for each  
video picture frame is a unique picture position and the spatial multiplex video picture  
frame represents a mosaic of the video picture frames.

7. The method of claim 1, further comprising:

decoding the component headers prior to altering them; and  
encoding the new picture header and the altered component headers prior to  
concatenating the new picture header together with each video picture frame.

8. The method of claim 1, further comprising:

detecting whether one or more of the video picture frames has a component  
header that is a group of blocks format; and

when a group of blocks format is detected, converting the component header to  
the slice format prior to altering the component header to set a slice format based picture  
position for the video picture frame within a picture produced by the spatial multiplex  
video picture frame.

9. A system for creating spatial multiplex video picture frames from a plurality of video picture frames where each video picture frame has a picture header and a plurality of frame components with each frame component having a component header, the system comprising:

a data packet switch; and

a plurality of computing devices with each having a serial interface in communication with the data packet switch, the plurality of computing devices being configured to:

remove the picture header from video picture frames received through the data packet switch,

generate a new picture header for the spatial multiplex video picture frame with the new picture header indicating a slice format,

alter the component headers of the video picture frames received through the data packet switch to set a slice format based picture position for the spatial multiplex video picture frame, and

generate the spatial multiplex video picture frame by concatenating the new picture header together with the plurality of video picture frames having no picture header and having the altered component headers.

10. The system of claim 9, wherein the plurality of computing devices are further configured to transmit the spatial multiplex video picture frame to the data packet switch.

11. The system of claim 9, wherein the computing devices are computers with single microprocessors.

12. The system of claim 9, wherein the data packet switch is an Ethernet switch and the serial interface is an Ethernet interface.

13. The system of claim 9, wherein the plurality of video picture frames are from the set of QCIF, CIF, and 4CIF video picture frames.

14. A system for creating a continuous presence video display of multiple video picture frames where each video picture frame has a picture header and a plurality of frame components with each frame component having a component header, the system comprising:

a network having a plurality of communication channels;

at least one processing device in communication with the plurality of communication channels, the at least one processing device being configured to:

receive the multiple video picture frames from the multiple video sources through the communication channels;

remove the picture header from video picture frames,

generate a new picture header for a spatial multiplex video picture frame with the new picture header indicating a slice format,

decode and alter the component headers of the video picture frames to set a slice format based picture position for the spatial multiplex video picture frame,

re-encode the component headers,

generate the spatial multiplex video picture frame by concatenating the new picture header together with the plurality of video picture frames having no picture header and having the altered component headers, and

transmit the spatial multiplex video picture frame to the plurality of communication channels;

15. The system of claim 14, further comprising:

a plurality of video sites in communication with the plurality of communication channels, the plurality of video sites being configured to:

encode and transmit the video picture frames received by the at least one processing device,

receive and decode the spatial multiplex video picture frames transmitted by the at least one processing device, and

display the decoded spatial multiplex video picture frames on a video display.

16. The system of claim 15, wherein the plurality of video sites are in communication with the plurality of communication channels through an asymmetric digital subscriber line.

17. The system of claim 14, wherein the slice format based picture position for each video picture frame is a unique picture position and the spatial multiplex video picture frame represents a mosaic of the video picture frames.

18. A system for creating a continuous presence video display of multiple video picture frames where each video picture frame has a picture header and a plurality of frame components with each frame component having a component header, the system comprising:

a network having a plurality of communication channels; and  
a plurality of video sites linked through the plurality of communication channels, each video site being configured to:

generate video picture frames;  
transmit the generated video picture frames to the other video sites of the plurality,  
receive video picture frames generated and transmitted by the other video sites of the plurality,  
remove the picture header from the video picture frames,  
generate a new picture header for a spatial multiplex video picture frame with the new picture header indicating a slice format,  
alter the component headers of the video picture frames to set a slice format based picture position for the spatial multiplex video picture frame,  
generate the spatial multiplex video picture frames by concatenating the new picture header together with each video picture frame having no picture header and having the altered component headers,  
decode the spatial multiplex video picture frames, and  
display the decoded spatial multiplex video picture frames on a video display.

19. The system of claim 18, wherein the slice format based picture position for each video picture frame is a unique picture position and the spatial multiplex video picture frame represents a mosaic of the video picture frames.

20. The system of claim 18, wherein one or more of the video sites are further configured to include only the video picture frames received from other video sites in the spatial multiplex video picture frames.